

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1 to 53 (canceled)

Claim 54 (Currently Amended): A method for separating 2-hydroxy-4-methylthiobutyric acid (HMTBA) from a 2-hydroxy-4-methylthiobutyronitrile (HMTBN) acid hydrolysate mixture comprising HMTBA and water, comprising the following steps:

neutralizing the mixture with aqueous ammonia wherein the amount of water added to the hydrolysate mixture is sufficient to cause the formation of a separate aqueous phase;

settling the neutralized mixture to obtain an organic phase and an aqueous phase;

separating ~~an~~ the organic phase, which comprises ~~comprising~~ HMTBA, water and salts, from ~~an~~ the aqueous phase, which comprises ~~comprising~~ HMTBA, water and salts;

releasing the salts from the organic phase with an amount of a first organic solvent which is not very miscible with water by contacting said organic phase with said first organic solvent;

exhaustively extracting the HMTBA from the aqueous phase with an amount of a second organic solvent which is not very miscible with water by contacting said aqueous phase with said second organic solvent ; and

evaporating said first and second organic solvents, wherein said first and second organic solvents are the same or different, further wherein most of the salts are precipitated from the aqueous phase after the aqueous phase has been separated from the organic phase.

Claim 55 (Currently Amended): A method for separating 2-hydroxy-4-methylthiobutyric acid (HMTBA) from a 2-hydroxy-4-methylthiobutyronitrile (HMTBN) acid hydrolysate mixture comprising HMTBA and water, comprising the following steps:

neutralizing the mixture with aqueous ammonia wherein the amount of water added to the hydrolysate mixture is sufficient to cause the formation of a separate aqueous phase;

settling the neutralized mixture to obtain an organic phase and an aqueous phase;

separating the neutralized mixture into two phases wherein the first phase is ~~an~~ the organic phase comprising HMTBA, water and salts and the second phase is ~~an~~ the aqueous phase comprising HMTBA, water and salts;

treating the first phase, separately from the second phase, with a first organic solvent to release the salts from the first phase, wherein said first organic solvent is not very miscible with water;

treating the second phase, separately from the first phase, with a second organic solvent to exhaustively extract the HMTBA from the second phase, wherein the second organic solvent is not very miscible with water; and

evaporating said first and second organic solvents, wherein said first and second organic solvents are the same or different, further wherein most of the salts are precipitated from the aqueous phase after the aqueous phase has been separated from the organic phase.

Claim 56 (Previously Presented): The method of claim 54, wherein the organic phase is contacted with the first organic solvent in a first container and the aqueous phase is contacted with the second organic solvent in a second container that is separate from said first container.

Claim 57 (Previously Presented): The method of claim 55, wherein said first organic solvent is selected from the group consisting of ketones, aldehydes, ethers, esters, carbonates and alcohols, provided they dissolve the HMTBA.

Claim 58 (Previously Presented): The method of claim 55, wherein said second organic solvent is selected from the group consisting of ketones, aldehydes, ethers, esters, carbonates and alcohols, provided they dissolve the HMTBA.

Claim 59 (New): The method of claim 54, wherein the first organic solvent and the second organic solvent are identical.

Claim 60 (New): The method of claim 54, wherein the first organic solvent and the second organic solvent are different.

Claim 61 (New): The method of claim 54, wherein said first organic solvent is selected from the group consisting of ketones, aldehydes, ethers, esters, carbonates and alcohols, provided they dissolve the HMTBA.

Claim 62 (New): The method of claim 61, wherein said first organic solvent is selected from the group consisting of ketones of low molecular weight, ethers and carbonates.

Claim 63 (New): The method of claim 62, wherein the first organic solvent is selected from the group consisting of methyl ethyl ketone, methyl isobutyl ketone, methyl tert-butyl ether, diisopropyl ether and diethyl carbonate.

Claim 64 (New): The method of claim 54, wherein the amount of the first organic solvent used with respect to the organic phase is greater than 0.3 (w/w).

Claim 65 (New): The method of claim 64, wherein the amount of the first organic solvent used with respect to the organic phase is between 0.3 and 1 (w/w).

Claim 66 (New): The method of claim 54, wherein the second organic solvent is selected from the group consisting of ketones, aldehydes, ethers, esters, carbonates and alcohols, provided they dissolve the HMTBA.

Claim 67 (New): The method of claim 66, wherein the second organic solvent is selected from the group consisting of ketones of low molecular weight, ethers and carbonates.

Claim 68 (New): The method of claim 67, wherein the second organic solvent is selected from the group consisting of methyl ethyl ketone, methyl isobutyl ketone, methyl tert-butyl ether, diisopropyl ether and diethyl carbonate.

Claim 69 (New): The method of claim 54, wherein the amount of the second organic solvent with respect to the aqueous phase is greater than 0.05 (w/w).

Claim 70 (New): The method of claim 69, wherein the amount of the second organic solvent with respect to the aqueous phase is between 0.1 and 0.5 (w/w).

Claim 71 (New): The method of claim 54, wherein the exhaustive extraction of HMTBA and the release of the salts are carried out concomitantly and according to a continuous process.

Claim 72 (New): The method of claim 54, wherein after the salts have been released from the organic phase, at least a portion of the first organic solvent is separated from the HMTBA and recycled so that it becomes at least a portion of the second organic solvent.

Claim 73 (New): The method of claim 54, wherein the salts obtained from the aqueous phase are crystallized.

Claim 74 (New): The method of claim 73, wherein the resulting salt crystals are treated by electrodialysis in order to generate ammonia, which is recycled to become part of the aqueous ammonia, and sulfuric acid, which, after concentration, is recycled for use in obtaining the HMTBN acid hydrolysate mixture.

Claim 75 (New): The method of claim 73, wherein the resulting salt crystals are thermally treated to recover a sulfuric acid solution which is recycled for use in obtaining the HMTBN acid hydrolysate mixture.

Claim 76 (New): A method of using the salts recovered from the aqueous phase in the process of claim 73, comprising the step of applying the salts to soil or plants as fertilizer.